



STATE OF NEVADA—DEPARTMENT OF PERSONNEL

CLASS SPECIFICATION

<u>TITLE</u>	<u>GRADE</u>	<u>EEO-4</u>	<u>CODE</u>
MANAGER II, PROFESSIONAL ENGINEER	44*	B	6.202
MANAGER I, PROFESSIONAL ENGINEER	43*	B	6.224

BENCHMARK DESCRIPTIONS

The following benchmark descriptions are representative examples of positions at each level in several user agencies, but they are not intended to be all-inclusive. Allocation of new or existing positions not described below must be determined by a review of the nature and complexity of work performed, the knowledge, skills and abilities required, independence/supervision received, scope of responsibility/consequence of error, authority to take action/decision-making, and personal contacts necessary to complete work.

MANAGER II, PROFESSIONAL ENGINEER

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

Division of Environmental Protection: Plan, organize and direct major, complex statewide environmental programs to ensure compliance with State and federal laws, rules and regulations within a function such as air quality, water quality, mining regulation and reclamation, water quality planning, water permits and compliance, wastewater treatment, waste management, hazardous materials, or federal facilities.

Establish goals, objectives, schedules, policies and procedures that are compatible with statutory, regulatory, departmental and divisional requirements; develop work plans, budgets and applications for federal grants in accordance with applicable federal laws and regulations utilizing federal and State accounting policies and procedures to achieve the goals of the division; develop and review regulations to generate fees from the regulated community and evaluate fee revenues to ensure their adequacy to support environment regulatory programs; review and approve bills, contract payments and travel claims in accordance with contracts, goods received and applicable policies and regulations; ensure spending complies with federal and State requirements and authorized federal and State budgets.

Establish organizational structures and provide programmatic direction and guidance by determining and establishing branches and sections to most effectively achieve objectives; create and implement a strategy that gives long term direction to the bureau; provide day-to-day programmatic direction and advice to branch supervisors in the execution of strategy to attain goals and objectives.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):

Working knowledge of: engineering principles associated with waste treatment; current technology for pollution control, and the environmental impact associated with the release of toxic chemicals and biological agents; principles of engineering economics to analyze impacts of decisions on the regulated community. **Ability to:** organize and manage complex programs related to the control of biological and chemical pollutants discharged to the environment (program elements typically include technical investigations and monitoring, permitting, technical services, compliance and enforcement and planning); direct individuals and teams to meet required goals and objectives, prioritize competing demands, and track multiple projects and outputs.

*Reflects a 2-grade, special salary adjustment authorized by the 2001 Legislature to improve recruitment and retention.

BENCHMARK DESCRIPTIONS (cont'd)**MANAGER II, PROFESSIONAL ENGINEER (cont'd)****DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES (cont'd)****Division of Environmental Protection (cont'd)**

FULL PERFORMANCE KNOWLEDGE, SKILLS AND ABILITIES (typically acquired on the job):

Working knowledge of: Federal Clean Water Act, portions of the Code of Federal Regulations, Nevada Revised Statutes (NRS) and the Nevada Administrative Code (NAC) pertaining to air and water quality, solid and hazardous waste and procedural requirements. **Ability to:** prepare and administer budgets for complex environmental control programs; estimate revenues derived from a combination of State appropriated funds, federal grants, permit fees, and penalties; track expenditures in order to make budget adjustments during the fiscal year.

Division of Water Resources: Plan, organize and direct the development of complex water resource projects and the administration of statutes relating to water; administer and manage water rights applications, ground water, surface water, adjudications, well drilling, the dam safety program, special water projects, hearings activities, and the Las Vegas branch office.

Assist management in the review of existing statutes and determine if changes or deletions are necessary; review statutes and court cases pertinent to the change; prepare proposed language, information and justification for amendments; prepare comments to proposed federal regulation changes and additions to represent the State's best interest.

Conduct administrative hearings to obtain additional information for resolving protests and other controversies by setting procedures to be followed, listening to protestants and applicants present their case, ruling on attorney's motions and objections, and examining expert witnesses to produce a complete and accurate record for the State Engineer to examine.

Prepare rulings for management's review to approve or deny applications; review evidence obtained from research, published hydrologic reports, testimony of professional and expert witnesses, field investigations and hearings; resolve disputes; evaluate impact to existing water rights; determine if approving application is in the public interest and consult with the Deputy Attorney General on legal aspects.

Prepare complex permit terms for the State Engineer's review so permits can be administered in accordance with Nevada Water Law, agreements and rulings, court decrees, and practical engineered limitations by incorporating standard permit terms that apply; develop special terms that may be required and cover conditions that may lead to disputes and lawsuits in the future; prepare orders which regulate groundwater basin for State Engineer's review; or enforce State water law and prepare documentation for Attorney General's Office for any legal ramifications of the order.

Oversee well drilling regulations, groundwater inventories, basin assessments, adjudications and review of clearinghouse documents, certification of water rights, pumpage inventories, and monitoring data.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):

Dam Safety Program - Knowledge of: engineering hydrology to predict runoff flows that result from snowmelt and storm events and to calculate water flow capacity in pipes and open channels; geotechnical principles to estimate soil strength and ability of soil to perform as a dam embankment material; surveying principles to locate surveying monuments in field, locate property lines, locate points of diversion and measure water and land surface elevations; civil engineering design practices to review dam designs.

BENCHMARK DESCRIPTIONS (cont'd)

MANAGER II, PROFESSIONAL ENGINEER (cont'd)DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES (cont'd)Division of Water Resources (cont'd)

Water Rights and Adjudication Program – **Knowledge of:** water law statutes and cases, policies and interpretation governing operations and duties of the Division of Water Resources, adjudication processes and decrees. **Ability to:** make accurate estimates of water volumes, diversion rates and conversions mentally and quickly to provide approximate answers to questions; operate and understand calculators, computers; water measuring equipment, surveying instruments to read maps accurately; write technical reports concerning water resources such as rulings for decisions on applications, stating water availability, general hydrology and groundwater basin pumpage inventory reports; write permit terms which include quantities of water, restrictions, and requirements of the permit holder; coordinate permit terms by determining the time, place and sequence of actions to be taken on the basis of analysis of data; interpret engineering plans and specifications; review design package for construction of structural problem in a dam; express conceptual plan of a solution to a dam problem in engineering drawings; read and interpret technical documents such as engineer's design reports and government documents regarding stream flow records and dam design.

FULL PERFORMANCE KNOWLEDGE, SKILLS AND ABILITIES (typically acquired on the job):

Working knowledge of: procedures related to conducting hearings; regulations for water well and related drilling; common methods of measuring water as practiced in western states. **Knowledge of:** Nevada Revised Statutes, Nevada Administrative Code and case law regarding water law and policies and procedures of the division as it has evolved through administrative actions since the enactment of the Nevada Water Law in 1905 and subsequent amendments; the federal, state and local agencies' rules and regulations pertaining to water supply, remediation plans for removing contaminants from ground water aquifers and areas for commitments of service by water companies; provisions of open meeting statutes. **Ability to:** comprehend and analyze technical engineering and scientific information such as ground water hydrology, geology, groundwater modeling, fluid mechanics and surveying as submitted in support of water right applicants or protestants of any water right application; work with other federal, state or local agencies relating to water issues; write concise, logical, grammatically and factually correct draft rulings of the State Engineer and analytical reports to advise the State Engineer on water related issues.

Dam Safety Program - **Knowledge of:** U.S. Bureau of Reclamation and U.S. Army Corps of Engineers Dam Safety Criteria to administer the dam safety program. **Ability to:** make decisions on water rights and dam applications or solutions to dam deficiencies and on acceptance/denial of claim of vested rights; interpret State water right decrees in order to calculate priorities and water quantities and other provisions. **Skill in:** operating a personal computer to make graphs and tables and communicate with U.S. Geological Survey computer to obtain daily stream flow rates.

Hearings Section: Prepare and conduct hearings as directed by the State Engineer; determine information to be developed and presented; prepare highly technical engineering, scientific, geologic and hydrologic data and reduce information to exhibits for introduction at hearings; determine data to be requested from parties; prepare/conduct pre-hearing conferences to establish uncontested matters; present contested matters and develop a full, fair and complete record so that the final decision is based on all available information for the proper and lawful use of the waters of Nevada; preside at hearings to ensure that conduct complies with the rules and regulations of the division, the Nevada Administrative Procedure Act, and the constitutional requirements of fair and full opportunity to be heard; rule on and decide complex issues of standing to participate, order of procedure, qualification of expert witnesses, objections to proposed exhibits and testimony, and exercise independent, informed judgment to ensure that all testimony and evidence needed for a proper decision is put on the record; prepare written decisions for the State Engineer's review.

BENCHMARK DESCRIPTIONS (cont'd)

MANAGER II, PROFESSIONAL ENGINEER (cont'd)

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES (cont'd)

Hearings Section (cont'd)

Assist the Deputy Attorney General in court litigation by preparing the record on review for each contested decision and submitting the record to the appropriate court; assist the Deputy Attorney General at court proceedings on appeals; and appear for the Deputy Attorney General when unavoidable time conflicts arise and independently present the agency's case to the court utilizing appropriate court procedure.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):

Detailed knowledge of: water law statutes and cases, policies and interpretation governing operations and duties of the Division of Water Resources and rules of evidence. **Knowledge of:** practical, legal and regulatory principles of water and related State laws; practical, legal and regulatory principles in the water use field. **Ability to:** read and comprehend legal and highly technical, complex and scientific documents; mediate disputes.

FULL PERFORMANCE KNOWLEDGE, SKILLS AND ABILITIES (typically acquired on the job):

Knowledge of: applicable sections of the Nevada Revised Statutes, Nevada Administrative Code and case law regarding water law and hearings; legal principles, their application and legal research methods. **Ability to:** apply knowledge of water and related laws in comprehensive reports or in hearings; collect evidence and prepare documentation for use in hearings or court; analyze detailed hydro-geological, geological, engineering, scientific reports and studies, and statutes for matters related to water law and regulations; organize and conduct special investigations and studies; interpret legal requirements and apply them at hearings.

MANAGER I, PROFESSIONAL ENGINEER

DEPARTMENT OF TRANSPORTATION

Materials and Testing Division: Manage the operations and staff of a branch within the division. Provide solutions to problems by determining the corrective measures necessary to repair existing roadway conditions; determine research projects to study unusual or difficult problems in order to check untried or new methods of construction; and analyze materials' properties and their effect on associated materials in conjunction with new product development.

Determine specifications for new products and upgrade current specifications to ensure proper use of available materials; and develop specifications for the purchase of new or upgraded equipment for the continuation of field investigations.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):

Detailed knowledge of: engineering properties of construction materials, engineering principles, practices and theory and terminology related to highway construction. **Working knowledge of:** uses and capabilities of new products and work methods. **Ability to:** compare materials used in highway construction and judge whether they are similar to or significantly different from prescribed standards.

BENCHMARK DESCRIPTIONS (cont'd)

MANAGER I, PROFESSIONAL ENGINEER (cont'd)DEPARTMENT OF TRANSPORTATION (cont'd)Materials and Testing Division (cont'd)

Bituminous Branch: Review and approve cement and lime treated mix designs and bituminous mix designs; approve material source for the production of bituminous aggregates and roadbed aggregates; represent the division on the Restoration, Rehabilitation and Construction Committee which establishes statewide projects, and the location and length of projects; evaluate type and causes of distress; establish cost effective corrective actions for restoration, rehabilitation or reconstruction; and implement research associated with bituminous, cement or lime mix designs, additives and asphalt to provide for a more durable and longer lasting pavement.

FULL PERFORMANCE KNOWLEDGE, SKILLS AND ABILITIES (typically acquired on the job):

Ability to: perceive and define cause and effect relationships in pavement performance, constructability and specifications; analyze complex technical data such as the Pavement Management System, pavement condition data, and the National Weather Service environmental data; modify lime, cement-treated base and bituminous mix designs, procedures or methods to meet current standards.

Geotechnical Branch: Develop policies, methods and routines for field and lab testing, report writing and construction procedures to produce solutions and make recommendations for construction purposes; evaluate and assess the need for replacement of equipment; coordinate activities of the branch with other divisions and agencies; prepare consultant agreements, interview for consultants, administer consultant agreements, and review and evaluate consultants' progress.

FULL PERFORMANCE KNOWLEDGE, SKILLS AND ABILITIES (typically acquired on the job):

Geotechnical Branch - Detailed knowledge of: accepted geotechnical practices and procedures, lab testing methods for soils, field testing and sampling procedures, construction procedures, department policies and procedures and report writing; equipment capabilities and purpose, sampling and testing procedures and equipment cost; department consultant hiring procedures and practices, writing requests for proposals, project cost estimates proposed for consultant and end results expected from consultant; departmental equipment capabilities; soil behavior under adverse conditions, construction procedures related to geotechnical factors, and accepted soil parameters needed for corrective action. **Working knowledge of:** testing and sampling equipment. **General knowledge of:** which consultants are capable of undertaking a project; negotiating procedures and techniques. **Ability to:** recognize equipment best suited to accomplish a specific task and compare cost versus need; interview and evaluate consultants' qualifications; conceptualize and present information on scope of project, negotiate a fair settlement to obtain the best product for the most reasonable cost, and review consultants' work in progress.

Pavement Design Branch: Review and approve the design of structural sections for flexible and rigid pavements; review and approve sources for needed materials to be used on statewide projects; evaluate in-place pavement sections to establish corrective actions and design treatments necessary for rehabilitation projects; determine pavement investigations used in the development of pavement designs; initiate agreement between research organizations, consultants and testing service vendors for the continuation of ongoing studies; implement research associated with pavement investigation and pavement design.

FULL PERFORMANCE KNOWLEDGE, SKILLS AND ABILITIES (typically acquired on the job):

Ability to: perceive and define cause and effect relationships in pavement management and pavement design; analyze complex technical data such as the pavement management survey data and radiological safety using logic and quantitative reasoning; modify and/or adapt pavement designs, procedures or methods to current standards.

BENCHMARK DESCRIPTIONS (cont'd)

MANAGER I, PROFESSIONAL ENGINEER (cont'd)

DEPARTMENT OF TRANSPORTATION (cont'd)

Materials and Testing Division (cont'd)

Structural/Chemical Branch: Analyze and approve recommendations made by staff for specification changes on specific projects; originate standard specifications for inclusion in future projects; negotiate with staff and other division/sections to reach agreement on specification changes; and develop specifications for purchase of testing equipment to replace or augment existing equipment.

FULL PERFORMANCE KNOWLEDGE, SKILLS AND ABILITIES (typically acquired on the job):

Ability to: modify and/or adapt concrete mix designs, procedures or methods to meet current standards.

Design Division: Manage the operations and staff of design functions within the division that includes in-house roadway design, consultant administration, specifications, hydraulics, and intergovernmental programs.

Roadway Design: Coordinate the assignments of design projects with other division and section managers; establish project priorities; assign projects to project coordinators and designers; calculate preliminary engineering costs; determine when consultant services are required to augment in-house design staff; review preliminary and final construction estimates; monitor the progress of designs to ensure projects are on schedule and conform with Federal Highway Administration and department guidelines; provide technical expertise to resolve complex engineering problems with assigned staff and other divisions/sections; review plans for continuity of layout and constructability; review and approve unit prices on items of work for final estimates to maintain reasonable costs and budgets; negotiate and prepare legal agreements or supplemental agreements covering work with local entities, developers, and other private parties on individual projects; attend project status meetings to provide advice as to design standard and department policy; review final draft of special provisions; review all projects performed by assigned staff for certification of compliance with design standards; and certify that roadway project plans and specifications conform with standards.

Provide engineering and technical support for construction and maintenance; write requests for change orders to existing contracts; review contract change orders from other divisions; recommend solutions to contract problems as a result of design changes or unanticipated circumstances in the field; consult with other divisions on problems that occur during construction; represent the division at construction project meetings.

Coordinate project activities by establishing project priority list; organize, meet and correspond with other divisions and local, State and federal agencies to discuss and develop project information, resolve problems, and provide information to aid in prioritizing projects.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):

Detailed knowledge of: principles of engineering drafting including nomenclature, methods, conventional symbols and sources of information. **Working knowledge of:** the correct legal form and substance to formulate concise and accurate legal documents and agreements. **General knowledge of:** construction procedures and methods. **Ability to:** perform particular phases of engineering work such as highway capacity calculations and geometric designs of roadways.

FULL PERFORMANCE KNOWLEDGE, SKILLS AND ABILITIES (typically acquired on the job):

Detailed knowledge of: the physical priorities of construction materials related to roadway items.

Working knowledge of: various federal, State and department manuals, handbooks and guidelines relative to transportation engineering; needs and responsibilities of divisions within the department.

General knowledge of: data processing and its application to design and use of personal computers;

BENCHMARK DESCRIPTIONS (cont'd)

MANAGER I, PROFESSIONAL ENGINEER (cont'd)

DEPARTMENT OF TRANSPORTATION (cont'd)

Design Division (cont'd)

Roadway Design (cont'd)

FULL PERFORMANCE KNOWLEDGE, SKILLS AND ABILITIES (cont'd)

federal, State and local environmental standards and regulations and their effect on department projects and facilities. **Ability to:** write and direct the writing of standard and special specifications; modify or adapt standard design procedures to fit atypical circumstances while maintaining economic constraints, continuity, quality, safety and schedules.

Roadway Design Consultant Administration: Administer the consultant program for the division by formulating and updating consultant pre-qualification lists; review and rank on-call proposals used for consultant selection; develop a Request for Proposal (RFP) package for each major project designated for outsourcing to consultants; review and rank RFP submittals; establish cost estimates, project schedule, scope of work, and develop legal agreements for the project; conduct scope of work and cost negotiations; implement the contract; attend project status meetings to provide advice as to design standard and department policy; upon completion of the project, certify to the design standards and evaluate the consultant's performance.

Coordinate highway projects to provide technical expertise in solving complex engineering problems and to schedule and facilitate project meetings as required to keep all divisions and agencies apprised of the project impact; develop and recommend new standards, policies and procedures for consultant-designed projects.

Administer the development of design projects by coordinating assigned design projects with other division and section managers; establish project priorities; assign projects to project coordinators; calculate preliminary engineering costs; review preliminary construction estimates; monitor the progress of designs to ensure projects are on schedule and designed in accordance with Federal Highway Administration and department guidelines; review plans for continuity of layout and constructability; review and approve unit prices on items of work for final estimates to maintain reasonable costs and budgets; negotiate and prepare legal agreements or supplemental agreements covering work with local entities on individual projects; review special provisions for items that may be required on individual projects; review final draft of special provisions; review all projects designed by consultants and managed by assigned staff for certification of compliance with design standards; certify that roadway project plans and specifications conform with standards.

Provide engineering and technical support for construction and maintenance by reviewing requests prepared by consultants for change orders to existing contracts; review contract change orders from other divisions; recommend solutions to contract problems as a result of design changes or unanticipated circumstances in the field; consult with other divisions on problems that occur during construction; and represent the division at construction project meetings.

Coordinate project activities by establishing project priority list; organize, meet and correspond with other divisions, and local, State and federal agencies to discuss and develop project information, resolve problems, and provide information to aid in prioritizing projects.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):

Working knowledge of: internal/departmental consultant management procedures and policies. **Ability to:** perform difficult technical research and formulate comprehensive recommendations regarding engineering problems; interpret contract plans, specifications, and construction estimates.

BENCHMARK DESCRIPTIONS (cont'd)

MANAGER I, PROFESSIONAL ENGINEER (cont'd)

DEPARTMENT OF TRANSPORTATION (cont'd)Design Division (cont'd)*Roadway Design Consultant Administration* (cont'd)

FULL PERFORMANCE KNOWLEDGE, SKILLS AND ABILITIES (typically acquired on the job):

Working knowledge of: current principles and standards of civil engineering with reference to highway design. **Ability to:** plan, organize and direct employees, consultants, and associates engaged in a variety of work.

Hydraulic Section: Manage one or more of the following programs/activities: Bridge Scour Program, Water Quality and Erosion Control Program, Lake Tahoe Environmental Improvement Program, Clear Creek Erosion Control Program, consultant administration, internal design services and providing technical support services to NDOT districts; identify and prioritize program elements to include identifying funding sources and submitting funding applications; prepare funding agreements; program projects and ensure inclusion of program elements in the State Transportation Improvement Program (STIP) and NDOT annual work program.

Manage and oversee hydraulics, water quality, and erosion control design consultant contracts to include preparing consultant requests for proposal; evaluate proposals and select consultants; negotiate and prepare consultant agreements and amendments; monitor design efforts of consultants to ensure compliance with project scope; review invoices; appraise consultants, and resolve contract disputes, appeals and terminations.

Provide technical leadership in solving flooding, hydraulics, water quality and erosion control issues; prepare inter-local agreements; oversee research and monitoring activities.

Review drainage studies, internal and consultant designs, occupancy permit applications, surplus property requests, new products and procedures, agreements, correspondence, proposals, and guidelines to ensure compliance with applicable policies, procedures, and guidelines.

Manage the development and maintenance of all related hydrologic, hydraulic, water quality and erosion control standards, guidelines, specifications and manuals.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):

Working knowledge of: principles of engineering, hydrology, fluid mechanics, open channel hydraulics, properties of soils, construction materials, surveying, highway design, and river mechanics. **Ability to:** prepare engineering drawings of drainage designs.

FULL PERFORMANCE KNOWLEDGE, SKILLS AND ABILITIES (typically acquired on the job):

Working knowledge of: State and federal policies and guidelines for highway drainage; State, federal, and city/county floodplain management regulations; construction materials related to highway drainage products. **General knowledge of:** highway construction practices, roadway design and highway maintenance practices. **Ability to:** assess the need for additional resources such as consulting engineers to maintain project schedules; compare/inspect engineering drawings and technical reports to determine whether they are similar to or different from prescribed standards; read, understand and apply information found in technical documents such as hydraulic design manuals; evaluate beneficial or adverse impacts to existing drainage patterns caused by roadway projects; exercise use of engineering judgment in hydraulic or hydrologic design when faced with minimal information and the need to produce results; adapt design work to changing conditions; recognize possible legal ramifications of changing existing drainage patterns; design, evaluate and select a preferred design from several alternatives.

BENCHMARK DESCRIPTIONS (cont'd)**MANAGER I, PROFESSIONAL ENGINEER (cont'd)****DEPARTMENT OF TRANSPORTATION (cont'd)****Design Division (cont'd)**

Intergovernmental Programs: Administer division aspects of the Stewardship Program; manage and coordinate stewardship project development from conception to completion; establish project scope, budget and schedule; establish project priorities; negotiate and prepare legal agreements or supplemental agreements covering work with governmental agencies on individual projects; review plans for continuity of layout and constructability; coordinate with other divisions and local agencies to develop project information and resolve problems; provide engineering and technical support to staff and other divisions as to design standards and conformance with Federal Highway Administration and department guidelines; review final draft of bidding documents; review contract change orders from local agencies; and develop and maintain policies and procedures for the Stewardship Program.

Represent the design division during the project scoping for the payment preservation prioritization program including evaluation, recommendation and prioritization of projects within the program; establish preliminary cost estimates for each of the recommended projects; represent the design division at meetings with management to discuss and approve the program.

Recommend approval or denial of encroachment permits; determine which divisions/sections need to be involved in the evaluation of the encroachment permits; work with the permittee, division personnel and Federal Highway Administration (FHWA) when required to resolve permit problems.

Specifications: Perform administrative functions to include certifying that federal aid projects prepared by the Specifications section are prepared in accordance with applicable standard specifications, policies and guidelines and enumerated in the Federal Aid Highway Program Manual and documents published by the department; manage standard specifications, special provisions, and special technical specifications and research activities; maintain approved corrections and additions to the standard specification; prepare written modifications to the special provisions to ensure proper coverage of items of work; write specifications to cover new product descriptions, materials, construction methods, and method of measurement and payment; send the written specification to other divisions for review and comment.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):

Ability to: read specifications and related documents prepared by others and check for completeness and content; explain to the specification writer the source and need for revisions to the documents; review letters and memoranda requesting revisions to the standard specifications; recommend changes to specification writer's material as required; write letters and memoranda in response to specification requests.

FULL PERFORMANCE KNOWLEDGE, SKILLS AND ABILITIES (typically acquired on the job):

Working knowledge of: policies related to plans and specifications so that decisions are consistent, acceptable and workable; various acceptable specifications; standard specifications and other appropriate manuals on engineering specifications. **General knowledge of:** existing contract special provisions and similar work on other projects; Nevada's Certification Plan and related specification preparation for projects. **Ability to:** interpret plans and specifications to determine adequacy of written descriptions; read technical special provisions to determine their completeness in describing the item of work; write general and technical specifications and correction explanations to plans and special provisions; analyze requests for supplemental notices and process as necessary; analyze proposed construction methods and identify potential problems; write technical specifications based on product material and construction requirements; refer inquirers to proper department if questions or request is outside the jurisdiction of the specifications section; analyze material and construction information for the estimate of production rates.

BENCHMARK DESCRIPTIONS (cont'd)**MANAGER I, PROFESSIONAL ENGINEER (cont'd)****DEPARTMENT OF TRANSPORTATION (cont'd)****Design Division (cont'd)**

Traffic Engineering: Review and evaluate traffic impact studies to ensure compliance with department guidelines; assess the findings and recommendations of each traffic impact study from the consultant engineer to determine if the proposed development meets department standards; coordinate with the department, local government entities and concerned parties to prepare recommendations concerning the proposed development; prepare recommendations for submittal to the consultant engineer. Review and update all traffic engineering standards used by the department and other agencies as needed.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):

Working knowledge of: federal and State guidelines pertaining to signs, pavement marking, traffic control, traffic signals and lighting; geometric design policies and practices. **Ability to:** write concise, logical, grammatically correct letters and reports to explain the department's traffic engineering policies and procedures to consultants, concerned citizens and other department personnel; write technical reports on experimental products concerning traffic engineering.

Safety Engineering Division: Manage the operations and staff of Statewide Safety Engineering Programs, Railroad Safety Engineering Programs and the Safety Analysis Program; establish safety project work plans for each category; review project scope and costs with program coordinators to ensure federal safety funds are spent on the most cost effective safety projects; assign work schedules; establish procedures and time frames for completing project engineering studies; and review and evaluate final project priority listings in order to make recommendations to the division administrator.

Coordinate safety programs by analyzing and preparing reports of traffic and safety engineering data for the department's legal division in tort liability suits; provide accident and safety statistics to the news media; prepare verbal or written reports to the Federal Highway Administration, departmental divisions and local governmental entities regarding revisions to procedures or policy changes in the Highway Safety Improvement Program; coordinate and participate in meetings concerning contract agreements, project justifications, conformance to policy and procedure or budgetary items, and coordinate project costs by maintaining files on project and division operating costs, initiating budget augmentation, adjustment memoranda and project billings.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):

Detailed knowledge of: highway capacity methodology and terminology. **Working knowledge of:** roadway and traffic control design principles; traffic control systems and operations; Nevada Geographic Roadway Network system and functional classification of federal and State routes. **Ability to:** interpret contract plans, specifications, and construction estimates.

FULL PERFORMANCE KNOWLEDGE, SKILLS AND ABILITIES (typically acquired on the job):

Working knowledge of: Federal Highway Program manuals, Highway Safety Improvement Program, and the American Association of State Highway Officials Policy of Geometric Design of Highways and Streets; railroad design principles, policy and procedures.

BENCHMARK DESCRIPTIONS (cont'd)

MANAGER I, PROFESSIONAL ENGINEER (cont'd)

DEPARTMENT OF TRANSPORTATION (cont'd)

Structural Division: Manage the operations and staff of the Bridge Design, the Bridge Inspection and Maintenance, or the Contract Administration/Technical Support sections within the division.

Bridge Design: Manage and direct the development of structural designs to include plans, specifications and estimates; develop structure-related special provisions; review and approve unit prices for final estimates; provide technical leadership in complex design problems.

Provide technical support for construction of structural items; recommend solutions to structure-related construction problems; request construction contract change orders to cover revisions to contracts when necessary; review contract change orders requested by other divisions and make recommendations based on the review; review construction shop drawings, erection drawings and false work drawings for approval or rejection; conduct on site construction inspections; represent the section at conferences required during the construction phase.

Administer selected bridge design consultant contracts for the division to include preparing requests for proposal; evaluate proposals and select consultants; negotiate and prepare consultant agreements; monitor design efforts of consultants to ensure compliance to specifications; review and approve invoices; respond to and resolve contract disputes, appeals and terminations.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):

Bridge Design and Contract Administration/Technical Support - Detailed knowledge of: principles of engineering drafting including nomenclature, methods, conventional symbols and sources of information; current structural analysis and design methods and their applications; civil and structural engineering terminology; applications of basic principles of physics and engineering mechanics to structural analysis and design; physical properties of construction materials related to structures. **Working knowledge of:** construction procedures and methods related to transportation structures. **General knowledge of:** computer software used in structural analysis and design; chemistry and metallurgy related to engineering materials; federal, State and local environmental standards and regulations and their affect on projects and facilities; roadway design, hydraulic design and right-of-way requirements. **Ability to:** make decisions based on technical information that affects the economy, safety, and aesthetics of transportation structures; apply knowledge of structural analysis and design methods properly during the course of design and construction projects; review and critique subordinates' design calculations and drawings; inspect construction projects in progress and determine if the work is in compliance to the requirements set forth in the plans, specifications and standards; inspect existing structures and determine the need for maintenance and repair; modify and adapt standard design procedures or methods to fit unusual conditions encountered; interpret the meaning and intent of specifications, codes and regulations.

FULL PERFORMANCE KNOWLEDGE, SKILLS AND ABILITIES (typically acquired on the job):

Bridge Design and Contract Administration/Technical Support - Working knowledge of: federal highway policy memoranda applicable to the design and construction of structures; manuals, policies, procedures and guidelines used by the division; the department's Standard Plans for Road and Bridge Construction. **General knowledge of:** the department's research administrative procedure guide. **Ability to:** write legal agreements for cooperative projects for governmental and private entities, consultant services and research projects; compare/inspect proposals from contractors, consultants, material suppliers, and researchers and judge whether they are similar to or different from prescribed standards.

BENCHMARK DESCRIPTIONS (cont'd)

MANAGER I, PROFESSIONAL ENGINEER (cont'd)

DEPARTMENT OF TRANSPORTATION (cont'd)Structural Division (cont'd)

Bridge Inspection and Maintenance: Develop policies, procedures and programs concerned with bridge maintenance and inspection activities to comply with federal and State regulations and department goals and objectives; develop training materials and coding guides for uniformity in data coding and to provide reference materials for bridge inspectors; develop and implement training classes regarding bridge inspection and maintenance programs; assist in developing and updating the department's Bridge Manual.

Perform quality control activities to ensure the completeness of inspection and maintenance data recorded on reports to determine if coding policies need revisions, evaluate the quality of data entry, and improve program quality. Respond to reports of structural damage and/or damage-prone structures by examining damaged structural elements and/or monitoring structures during critical events to evaluate damage, determine repair strategies, and preserve public safety.

Administer bridge maintenance inspection consultant contracts for the division to include preparing requests for proposal; evaluate proposals and select consultants; negotiate and prepare consultant agreements; monitor design efforts of consultants to ensure compliance to specifications; review and approve invoices; respond to and resolve contract disputes, appeals and terminations.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):

Detailed knowledge of: data requirements of the Bridge Inspection/Maintenance Program and the National Bridge Inventory; bridge inspection principles and techniques; application of principles of physics and engineering mechanics to structural analysis and design; the physical and chemical properties of construction materials used in bridges. **Working knowledge of:** federal laws pertaining to bridge inspection/maintenance programs and the national bridge inventory; Federal Highway Administration's policies with regard to bridge inspection/maintenance programs and bridge maintenance management systems; bridge design and construction procedures and terminology. **General knowledge of:** specifications for bridges; the manuals, policies, procedures and guidelines used by the division; environmental standards and regulations.

FULL PERFORMANCE KNOWLEDGE, SKILLS AND ABILITIES (typically acquired on the job):

Detailed knowledge of: Federal Highway Administration's goals and objectives pertaining to bridge inspection/maintenance programs and bridge maintenance management; department goals and objectives pertaining to bridge inspection and bridge maintenance management; monetary needs of the bridge inspection program. **Working knowledge of:** bridges in Nevada including their owners, locations, construction types and load limits; research and development in the field of bridge inspection and bridge maintenance management.

Contract Administration/Technical Support: Administer bridge design consultant contracts for the division to include preparing consultant requests for proposal; evaluate proposals and select consultants; negotiate and prepare consultant agreements; monitor design efforts of consultants to ensure compliance to specifications; review invoices; and resolve contract disputes, appeals and terminations.

Direct technical support functions to include reviewing and recommending approval for new products; administer activities involved in experimental and research projects and special studies; and direct the development of computer programs for use by the division.

BENCHMARK DESCRIPTIONS (cont'd)

MANAGER I, PROFESSIONAL ENGINEER (cont'd)

DEPARTMENT OF TRANSPORTATION (cont'd)

Structural Division (cont'd)

Contract Administration/Technical Support (cont'd)

Manage and direct the development of selected structural designs to include plans, specifications and estimates; develop structure-related special provisions; review and approve unit prices for final estimates; and provide technical leadership in complex design problems.

Provide technical support for construction of structural items; coordinate solutions to structure-related construction problems; request construction contract change orders to cover revisions to contracts when necessary; coordinate construction shop drawings, erection drawings and false work drawings for approval or rejection; conduct on site construction inspections; and represent the section at conferences required during the construction phase.

Districts: Plan, organize, direct, oversee, and document all aspects of contract administration; direct changes to contract plans and specifications; prepare progress estimates and authorize payment to the contractor for work completed in conformance with plans and specifications; monitor contractor's work force wage rates through review of certified payrolls to ensure compliance with federal and State wage and salary regulations; and monitor the Disadvantaged Business Enterprise (DBE) Program to ensure contractor's compliance with equal opportunity and apprenticeship goals.

Maintain communication with contractor's supervisors and staff, district personnel, and other division staff members in order to coordinate and schedule activities, address technical problem areas on the job site, identify job assignments and responsibilities, provide updates on project status and exchange information relating to project details.

Promote project safety by reviewing and modifying traffic control plans to ensure conformance with the appropriate standards; enforce contractor's adherence to established traffic control plans through direct and delegated supervision of placement and maintenance of traffic control devices; ensure employees are trained to recognize and handle hazardous materials properly; initiate and coordinate emergency response to job site accidents and/or hazards.

Determine when the contractor has completed contractual requirements in substantial compliance with contract plans and specifications and requests final acceptance; prepare final estimate of quantities and materials so final payment can be made; research and prepare documentation to support the department's position on claims filed against the contract; assist in representing the department at the Claims Review Board and testify in court when necessary.

Review preliminary plans and specifications to recommend improvements or note corrections and participate in project field reviews prior to design and during or after construction to recommend improvements to the design and construction processes; review environmental, maintenance and construction issues associated with construction contracts administered.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):

Detailed knowledge of: engineering principles and practices applicable to highway construction including supervision, contract administration, communications, safety, surveying, testing, inspection and field office procedures. **Working knowledge of:** federal and State affirmative action and equal employment opportunity laws and regulations applicable to both the department and contractors' employees. **Ability to:** read and evaluate complex critical path method project schedules; interpret contract plans and specifications; read and comprehend technical information, manuals and legal documents related to highway engineering; compose letters and memoranda to contractors, internal staff,

BENCHMARK DESCRIPTIONS (cont'd)**MANAGER I, PROFESSIONAL ENGINEER (cont'd)****DEPARTMENT OF TRANSPORTATION (cont'd)****Districts (cont'd)****ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (cont'd)**

other agencies and entities, and the public; compose and write contract change orders with clarity and accuracy and within guidelines established by the department; read, comprehend and comply with memoranda; document facts and project status; review inspector reports, test reports, and other field documentation to effectively monitor project progress; discuss a variety of job-related topics with contractors; maintain professional working relationships with contractors within the guidelines of the goals and objectives of the department; develop with the contractor changes in work that occur during the course of the project and negotiate an agreement acceptable to all parties while avoiding a claim situation; read and comprehend Materials Safety Data Sheets on all materials used in highway construction; review and modify complex traffic control plans in accordance with the appropriate standards to adapt to changes in construction site conditions. **Ability to:** travel extensively and work long and irregular hours.

FULL PERFORMANCE KNOWLEDGE, SKILLS AND ABILITIES (typically acquired on the job):

Working knowledge of: personal computers and software packages utilized in field office procedures.

Ability to: obtain certification in work zone traffic control supervision from the American Traffic Safety Services Association.

This class specification is used for classification, recruitment and examination purposes. It is not to be considered a substitute for work performance standards for positions assigned to this series.

	<u>6.202</u>	<u>6.224</u>
ESTABLISHED:	7/1/93P	7/1/93P
	8/31/92PC	8/31/92PC
REVISED:	11/17/93UC	11/17/93UC
REVISED:	6/29/95UC	6/29/95UC
REVISED:	7/1/01LG	7/1/01LG
REVISED:	11/8/05PC	11/8/05PC